

Performance indicators in higher education: recent developments in UK universities¹

Jim Taylor
Department of Economics
University of Lancaster

Between 1981 and 1984, the average cut in the funding of UK universities by the University Grants Committee was nearly 15% in real terms. In retrospect, this severe pruning of the university sector in the early 1980s has turned out to be a prelude to further radical changes in university funding. Government policy towards universities (and towards higher education more generally) is currently being redesigned to make the funding process more competitive in the hope that this will increase the efficiency and effectiveness of higher education in Britain.

The Government's policy towards higher education has been evolving at a rapid pace since 1985 when the Green Paper on *The Development of Higher Education into the 1990s* argued that the higher education sector was not performing its job satisfactorily.² According to the Green Paper, the higher education sector could improve its efficiency and effectiveness in several ways. The main recommendations were as follows:

1. Higher education should be more responsive to the needs of the economy. This will require closer links to be forged between higher education and industry. In addition, it will also be necessary to switch the subject mix away from the arts and humanities towards technical and vocationally-related courses.
2. Higher education depends far too heavily on public sector funds and greater efforts are needed to raise private funds through joint research, consultancy and continuing education.
3. Greater selectivity is needed in the allocation of research funding so that more resources are concentrated in centres of excellence.
4. The higher education sector should be more cost-conscious and should manage its resources more efficiently and more effectively. This will require the construction and regular publication of a range of performance indicators. These will be used to aid the resource allocation process both within and between institutions.

The same broad themes were reiterated in the recent White Paper on *Higher*

Education: Meeting the Challenge.³ In addition, however, two major changes to the organisation and funding of the university sector were announced. Firstly, the University Grants Committee is soon to be replaced by the Universities Funding Council. The members of the council will be appointed by the Secretary of State for Education and Science and will be drawn from the academic and non-academic world in about equal proportion. Secondly, the system of allocating funds to universities is to be changed from the block grant system to one based upon contractual agreements between the universities and the Universities Funding Council. Universities will have to offer a clearly specified range of educational services in exchange for government funding. The system of contracting has not yet been worked out in detail but the Government's first thoughts are spelt out in a consultative document recently produced by the Department of Education and Science.⁴ (1987c). It should also be noted that the Government intends to maintain tight control over the total level of expenditure on higher education and will also provide guidelines (to the Universities Funding Council and to the universities themselves) about the direction in which it thinks the universities ought to be going.

A common theme running through both the White Paper and the consultative document on contracts is the Government's emphasis on the need for performance indicators:

Arrangements for the flow of management information and for accountability from the universities to the Universities Funding Council and onwards to the Government should be much improved.⁵

A key element in the move to a system of contracting will be the introduction of more systematic review and monitoring of what institutions achieve with public funding from the Universities Funding Council and the Polytechnics and Colleges Funding Council. This will require the timely collection, analysis and, desirably, publication of more information about performance. The funding bodies will need at an early stage to enter into a dialogue with in-

stitutions about what measures of performance it might be serviceable and feasible to collect, and also how these indicators might be used to assess institutions' delivery of provision contracted for with public funds.⁶

The Government has gone further than simply stating that performance indicators will be needed. It makes it clear how it thinks the performance of universities should be measured:

Academic standards and the quality of teaching in higher education need to be judged by reference mainly to students' achievements. The numbers and class distribution of degrees awarded provide some measure as, conversely, do non-completion rates. External examiners' reports offer a vital commentary, and effective scrutiny of these by institutions is essential.⁷

The subsequent employment patterns of students provide some indication of the value of higher education courses to working life. Evaluation of institutional performance also requires students' achievements to be set alongside their entry standards. Greater attention needs to be given to these questions both nationally and by institution; and the essential data on performance in each institution should be published so that its record can be evaluated by the funding agencies, governing bodies, students and employers.⁸

Publication of performance indicators

The reaction of the universities to the Government's demand for regular publication of a set of performance indicators has been very quick: the first batch of indicators will be published by a joint working group of the University Grants Committee and the Committee of Vice-Chancellors and Principals in the autumn of 1987. This first set of data is likely to be the forerunner of a regular (annual) publication which will ultimately provide information on a wide range of university activities by cost centre (i.e. groups of departments) and by institution.

If the Government's recommendations are followed up, the list of published indicators will ultimately include a wide range of variables covering inputs and operational activities as well as various indicators of research and teaching outputs. An abbreviated list of some possible indicators (cleaned from various sources) is given in Table 1.

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Evaluation of performance indicators

Exactly how these indicators are to be used, and whether they are likely to be helpful in comparing the performance of universities (or departments within universities) is a question which has still not been satisfactorily answered.⁹ Evaluation involves far more than simply providing information about a set of variables which relate to the operation of institutions. Ideally, objectives should first be clearly specified so that an attempt can be made to measure the extent to which these objectives have been (or are being) achieved — and at what cost. In practice, it is likely that far cruder approaches will be adopted in the immediate future. Initially, the evaluation process is likely to be based on inter-university comparisons of individual variables such as the employment rate of new graduates. The success of a university's graduates in obtaining permanent employment, for example, could be used as an indicator of the extent to which each institution produces employable graduates. Universities with a high proportion of graduates obtaining a permanent job may be judged to have been more successful than universities with a low proportion of graduates obtaining a permanent job.

It is easy to show that such simplistic approaches to measuring the performance of universities are likely to be worthless. For example, it is possible for a university with a high proportion of graduates obtaining a permanent job to be performing less well than a university with a low proportion. Consider the following example: university A has a high proportion of graduates obtaining a permanent job (within six months of graduating) whereas university B has a low proportion. There may be very good reasons, however, why A's graduates get jobs more quickly than B's graduates. University A may have a subject mix which is heavily weighted in

Table 1. Performance indicators: some examples

Input indicators

Qualifications of new entrants
Undergraduate applications/places ratio
Funding from consultancy activities (as % of total funding)
Private funding of consultancy and research (as % of total funding)

Operational indicators

Staff/student ratios
Expenditure per student on student services (careers, counselling, etc)
Total costs per student
Central government revenue per student
Teaching costs per student
Administrative costs per student
Library costs per student
Computing costs per student
Ratio of support staff to academic staff

Teaching indicators

Staff workloads (teaching contact hours)
External reviews of courses, teaching methods, examination papers
Class distribution of degrees awarded
Non-completion rates
Success rate of Masters and PhD students
Student assessment of teaching methods and staff
First destinations of new graduates
Careers of graduates five years after graduation

Research indicators

Publications (per capita)
Citations (per capita)
Research income (as percent of total income)
Research grants (per capita)
Peer group assessment of research output

favour of vocationally-related subjects whereas university B may have a higher proportion of graduates in the arts and humanities. Since those graduating in vocationally-related subjects (such as accountancy) are more likely to know what type of job they want than arts and humanities students, their search for a job is likely to yield quicker results than those less firmly committed to a specific career. Indeed, many graduating in vocationally-related subjects will have a job offer on hand even before they graduate.

Comparisons between universities in their graduate employment rates are therefore worthless unless differences in subject mix are taken into account. This can be done by first calculating the graduate employment rate that each university would have had if its graduates had experienced the national employment rate in their degree subject. The national employment rate in each subject is therefore applied to each university's subject mix to provide a standardised (or expected) employment rate for each university. This can be used as the yardstick against which each university's actual graduate employment rate should be compared.¹⁰

But even this modified indicator may be inadequate since differences in the subject mix of universities may be only one factor

amongst many which lead to differences in the graduate employment rate between universities. Other factors which may influence the success of a university's graduates in the job market include: the degree results obtained by a university's graduates; the socio-economic group to which the parents of graduates belong; the location of the university in relation to the geographical distribution of jobs; the efficiency of the university's careers advisory services; and the links between the university's staff and potential employers (e.g. through research and consultancy). Direct comparisons between universities in the proportion of graduates who are successful in the job market are therefore likely to be of little value since like is not being compared with like.

Another indicator which has been suggested by the Government as a suitable measure of performance is the class distribution of degrees.¹¹ The proportion of each university's graduates obtaining a first or upper second class honours degree, for example, could be used as a measure of the quality of graduates produced by each university. But such a measure would be useless per se for measuring the quality of teaching in each institution since the quality of inputs (e.g. the ability of students) varies between universities.

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Comparisons of degree results between universities are therefore unlikely to be of much help in measuring the teaching performance of universities since the raw material inputs may vary in quality considerably between institutions. Ideally, we need to devise a measure of the value added to the knowledge and skills of each university's graduates. An obvious approach to constructing a measure of value added is to estimate the extent to which differences in degree results between universities are affected by the ability of each university's students (as reflected for example by A-level scores). Recent research indicates a very strong statistical relationship between the mean A-level score of each institution's intake of students and the proportion of these students who obtain a first or upper second.¹² Having estimated the statistical relationship between A-level score and degree result, it is possible to construct a performance indicator which takes differences in the A-level score of each university's students into account when comparing degree results. This can be done by first calculating the degree results for each institution which would have been expected given the mean A-level score of its students and then comparing the actual degree results with the expected degree results.

It would be highly dangerous, however, to place much faith in such an indicator since other factors in addition to the ability of students may be expected to have an effect on degree results. These other factors would have to be taken into account in any estimate of the value added by universities to the knowledge and skills of their students. Johnes and Taylor for example have found that the ex-Colleges of Advanced Technology and the new green-field universities established in the 1960s award a significantly higher proportion of upper seconds (on average) than the older civic universities.¹³ Whether these differences are due to corresponding differences in the quality of teaching between the newer and the older universities or whether they are due to differences in the methods of assessing students is impossible to say (at this stage). It would therefore be folly to use degree results as a performance indicator (even allowing for differences in the quality of student inputs) until more research has been done on identifying the factors causing differences in degree results between universities.

A final example of the difficulties involved in devising operationally useful performance indicators is provided by Bentham, who constructs several indicators relating to the research activity of UK geography departments.¹⁴ Bentham's indicators are based on three variables: publications, citations and research grants. He shows that the ranking of departments depends critically on the variable selected to measure research performance. Only a low correlation was found, for example, between publications per capita and research grants per capita.

The low correlation between publications per capita and research grants per capita raises an interesting question since it is believed that research income was an important input into the UGC's evaluation of geography departments in its recent (1986) assessment of the research strengths of each university. Furthermore, Bentham shows that the UGC's ratings of UK geography departments are most closely related to total rather than per capita research grant income, indicating a bias against smaller departments and departments geared to less expensive types of research activity. The low correlation between alternative performance indicators and the lack of correspondence between the UGC's evaluation of research strengths and individual indicators (particularly publications per capita) is a cause for concern not only about the validity of the UGC's ratings but also about the validity of research performance indicators more generally.

The need for caution in using performance indicators

The examples of performance indicators given in the previous section have already indicated that it will not be easy to construct meaningful and useful performance indicators for the higher education sector. It should also be realised that the use (and mis-use) of such indicators may have several damaging effects on higher education.

Firstly, there will be a strong temptation to construct indicators from the most readily available data (such as the first destinations record and the class distribution of degrees) even though such indicators may provide little useful information about the performance of universities. The first destination of graduates, for example, may provide very little indication about the social or economic value of different degree subjects but this is unlikely to deter the use of such information for strategic planning purposes unless more relevant data are produced.¹⁵ More fundamental problems arise in assessing the value of outputs such as culture, social and political awareness, and the acquiring of analytical and critical skills. The fact that these types of output

cannot be readily measured could result in a serious under-valuation of the benefits flowing from them.

"Concentration on the short term is an inevitable consequence of the financial pressures likely to be imposed on the university sector."

A second problem with performance indicators is that there will be a tendency for higher education institutions to sacrifice long-term benefits for more immediate short-term benefits in order to improve their short-term performance. Concentration on the short-term is an inevitable consequence of the financial pressures likely to be imposed on the university sector. The consultative document on contracts, for example, suggests that such contracts should be based upon a three-year plan: quick results will therefore be needed if universities are to be seen to be performing well. This emphasis on the short term does not augur well for progress in basic research. The new policy towards assessing the performance of universities may consequently have detrimental effects on the quality of research output. Pressure to produce research results quickly may induce researchers to take fewer risks and to undertake research work which is more likely to yield quick, but trivial, results. More academics may also turn to income-generating project work and consultancy in preference to tackling fundamental research problems.

A further adverse consequence of a shift away from basic research is an increase in the emigration rate of Britain's best researchers. The brain drain to the USA will be reinforced. This will have damaging effects on the UK university sector which will stretch far into the future.

Conclusion

Since the severe cut-backs in university expenditure in the early 1980s, the Government has made it crystal clear that the university sector will be expected to pay more attention to its efficiency and its effectiveness. Universities can therefore expect far greater public scrutiny of their activities than has traditionally been the case.

In addition to this greater scrutiny of their activities, the Government has made it clear that the traditional methods of allocating resources in the higher education sector are to be replaced by a more competitive approach. This is reflected in the proposed replacement of the University Grants Committee by a Universities

Funding Council.¹⁶ The funds made available by the Government for the university sector will be allocated through a system of contracting out educational services to individual institutions.¹⁷ These contracts will be based upon detailed strategic plans drawn up by each institution and the distribution of the available funds will be determined by the relative attractiveness of these strategic plans to the Funding Council.¹⁶

A direct implication of the change in the method of funding universities from a grant system to a contractual system is the introduction of a more detailed method of appraising the performance of institutions. This will require the construction of indicators which can be used for measuring the performance of each institution in relation to other institutions in the higher

education sector. Those institutions which perform the best will presumably find it easier to attract future funding from the Universities Funding Council than those institutions which perform less well. The Government has already indicated in general terms what types of indicators are required. Indeed, the universities have begun the process of producing and publishing a set of indicators. Precious little thought has yet been given, however, to the question of how the performance of universities (and their constituent parts) ought to be measured. The priority has been to produce a set of indicators as quickly as possible rather than to develop an acceptable methodology for evaluating the performance of universities. More thought now needs to be applied to the latter question.

The main conclusion of this article is

that great care will be needed in interpreting the various indicators which are currently being constructed. If these indicators are not used cautiously, major mistakes could easily be made in allocating resources both between and within universities. This is not to argue that attempts to measure the performance of universities should not be made. Indeed, universities (like all publicly-funded institutions) should welcome the opportunity to demonstrate their efficiency and effectiveness more openly to the taxpayer.

It would be prudent at this stage to label all so-called performance indicators with the following warning:

"These indicators may damage the health of higher education. Use with extreme caution. Do not take them at face value."

References

1. An extended version of this paper was presented at the University of Melbourne and at the Australian National University in Canberra. It is part of a larger research project on evaluating performance indicators in UK universities supported by the ESRC. The views expressed in this paper belong entirely to the author.
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12. J. Johnes and J. Taylor, 'Degree Quality: an Investigation into Differences between UK Universities', in *Higher Education*, (forthcoming).
13. Ibid.
14. G. Bentham, 'An evaluation of the UGC's ratings of the research of British university geography departments', *Area*, 1987.
15. A recent survey by the Employment Market Research Unit (Department of Employment) provides valuable information about the work histories of over 9000 students who graduated in 1980. Such surveys are needed regularly (e.g. annually) if useful indicators based upon the employment experience of graduates and diplomates are to be constructed.
16. Department of Education and Science, 'Universities Funding Council', Consultative document, May, 1987.
17. D.E.S., 'Contracts between funding bodies and higher education institutions', op. cit.